MARINE
RECREATIONAL INFORMATION
PROGRAM

FY Project Plan

Regionally Stratified Recreational Catch and Effort Estimates Using New MRIP Methodologies

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1. Overview

1.1. Background

The 2006 NRC Review concluded that fisheries management and stock-assessment techniques require recreational fisheries data at finer spatial and temporal scales than the MRFSS was designed to support. The 2010/2011 MRIP Implementation Plan identifies increased geographic resolution of surveys as a specific need for recreational fishing statistics to support management and science. As more accurate data collection methods are developed, tested, and implemented by MRIP, attention is expected to shift towards improving coverage and resolution (MRIP Imp. Plan, Nov. 2010). Pilot studies are in the final phases of analysis and review, and recommendations for implementing key components of the new MRIP survey design are expected soon. In January 2011, review of an MRIP project to improve estimation methods for the Access Point Angler Intercept Survey (APAIS) component of MRFSS was completed. A separate pilot study to develop an improved sampling design for the APAIS in the Atlantic and Gulf of Mexico was completed in 2010, and a final report with recommendations for implementation will be submitted for review by April, 2011 (MRIP Imp. Plan, Nov. 2010). Before new APAIS methods are implemented by MRIP and additional intercept samples are allocated at the state level, there is a critical need to evaluate the geographic distribution of intercept samples within the state of Florida and develop a method to improve spatial and temporal resolution of survey estimates.

Florida encompasses a geographic area that spans approximately 580 miles of coastline bordering the Atlantic Ocean and 770 miles of coastline bordering the Gulf of Mexico. Estimates of recreational fishing effort from the Coastal Household Telephone Survey indicate more than 50% of fishing trips in the South Atlantic and close to 70% of fishing trips in the Gulf of Mexico (excluding Texas) originate from Florida. Recreational target species and catch compositions vary greatly from north to south along the Atlantic and Gulf coasts of Florida, and seasonal migration patterns for some species result in temporal variations. Currently, the APAIS samples the state of Florida as two large sub-regions (strata). The Atlantic sub-region includes all counties on the eastern coast of the state down to Miami-Dade County (Fig. 1). The Gulf of Mexico (Gulf) sub-region includes all counties on the western coast of the state from the northern panhandle south to Monroe County (Fig. 1; note, fishing may also take place in the Atlantic Ocean from Monroe County). Sites are randomly selected from each sub-region, and each site is weighted according to expected fishing pressures. The premise of this weighted sample selection methodology is that intercept survey sites will be drawn proportionally with respect to the distribution of fishing effort across each sub-region. If there is high heterogeneity within a sample population, there is increased variability among samples and for species that are not homogeneously distributed from north to south along a coastline in Florida, the probability of encountering that species is highly correlated with the distribution of samples. It is often not possible for the current survey to be responsive to localized changes in fishing pressure from unpredictable events such as mid-season changes in fishing regulations, an oil spill, hurricanes, or red tide. Constraining such variance would be possible with a better stratified sample design.

There is an additional need to match sample strata between the two methods used to estimate for-hire effort and for-hire catch rates. The APAIS sample design for for-hire mode in Florida was never updated to match the new for-hire effort strata (Fig. 2). There is also a management and assessment need for more detailed information on where fish are harvested. No depth specific information is collected and there is no way to determine where a fish may have been harvested within a particular region and area combination.

1.2. Project Description

This proposal requests funds and technical support to design and implement methods to collect improved recreational catch and effort statistics within a large state-level geographic area. Estimates are needed at the level of year, wave or month, state, sub-region, and area fished for private boat, shore-based and for-hire fishing modes. The main objective is to design an improved stratified sampling methodology that reflects the bio-geographical variability within the state, which will improve state-level precision and accuracy of estimates and provide granularity at the sub-regional level necessary to support data needs for state and federal stock assessment and fisheries management. The study area is the state of Florida, which is currently stratified into two large sub-regions that are characterized by latitudinal shifts in species distributions and recreational catch compositions. The new survey design will better account for variance at the state level by appropriately assigning catch and effort among and within two adjacent federal management jurisdictions, the Gulf of Mexico and the South Atlantic. The timing of this project is intended to coincide with the availability of improved intercept survey methods and estimation methods that are in the final stages of analysis in 2010, with review by MRIP and approval for regional implementation scheduled to be complete in 2011 (MRIP Implementation Plan, Nov. 2010).

1.3. Objectives

Evaluate strata, develop methods that appropriately assign catch and effort within and among sub-regions, produce CPUE's for current and new sub-regions, incorporate depth and location of fishing.

1.4. References

* Breidt, F. J., H. Lai, J. Opsomer, and D. Van Voorhees. 2010. A Report of the MRIP Sampling and Estimation Project: Improved Estimation Methods for the Access Point Angler Intercept Survey Component of the Marine Recreational Fishery Statistics Survey. 61pp. * NRC (National Research Council), 2006. Review of Recreational Fisheries Survey Methods. National Acadamies Press, Washington, D.C. 187pp. * MRIP (Marine Recreational Information Program) Implementation Plan Revision 2: 2010-2011 Update. November, 2010.

2. Methodology

2.1. Methodology

Before new APAIS methods and necessary sample size increases are implemented at the state-level, we request that the state of Florida is first stratified into smaller sub-regions to better control variance associated with regional differences in catch composition and angling characteristics. Increased sample for the state of Florida should be distributed among each of the new sub-regions at the start of implementing new methodologies. This project proposal is timed in advance of implementation of new MRIP methods to allow adequate time to first design a new sample design for Florida and then distribute resources appropriately. Therefore, funding is requested in 2011 to begin planning and preparation for the anticipated implementation of new MRIP methodologies in Florida.
We request technical support from MRIP consultants during 2011 to work with this project team to design sampling methods that are suitable for generating separate estimates of cpue and effort for smaller sub-regions in Florida. Strata used to sample cpue in each fishing mode will match strata used to sample effort in each fishing mode. MRIP consultants will also work with the project team to incorporate a depth of fishing question and location of fishing map into intercept survey materials.

We request funding to supplement APAIS sample sizes in Florida beginning in January, 2012. New supplemental sample will be in addition to an initial sample drawn for the current two sub-regions in Florida. The supplemental sample will be distributed among the new, smaller sub-regions. The two samples will be used to produce side-by-side estimates of CPUE for both the current and new sub-regions. To ensure timeliness of data submission, we request funding for digitized pen-and-paper data recording technology and supporting software for use in the APAIS (for an example: http://www.roverusa.com/roverink/index.asp).

We request funding in 2012 to supplement the CHTS sample sizes for Florida as necessary to produce smaller sub-region effort estimates. Funding is also requested to include additional questions to the survey tool that collect information on the water body where fishing took place for trips originating from Monroe County. The additional data will be used to appropriately assign effort to the Atlantic and Gulf coasts and generate effort estimates for the smaller sub-regions. Sub-region estimates generated for this study will be compared to effort estimates using the current CHTS estimation methods in the same year.
We propose that Florida be stratified into 6 sub-regions (Fig. 3):

Northwest (NWFL):
Charter trips frequently target offshore reef fish and are concentrated at high pressure sites. Red snapper are more abundant and easily accessible to recreational anglers here than in any other region of the state.

Big Bend:
Inshore species are more frequently targeted and juveniles of heavily exploited species are frequently discarded. Fishing pressure is dispersed among numerous low pressure sites.

Tampa Bay:
This region is necessary to partition the influence of concentrated private boat fishing. This region is a major break between northern and southern species distributions.

Southwest (SWFL):
This region is characterized by an increased abundance of warm-water species. Fishing trips that originate from the Gulf coast of the Florida Keys will be assigned to this region.

Southeast (SEFL):
This region is necessary to partition the influence of concentrated, high fishing pressure sites in a densely populated region of the state. Fishing trips that originate from the Atlantic coast of the Florida Keys will be assigned to this region.

Northeast (NEFL):
This region contains more low fishing pressure sites and more inshore lagoons than the Southeast Region. The Gulf Stream veers away from the coast and passes further offshore.

2.2. Regions

2.3. Geographic Coverage

Gulf of Mexico and South Atlantic sub-regions of Florida.

2.4. Temporal Coverage

Design, 2011; Implementation, January 2012 - December 2012

2.5. Frequency

cpue estimates produced each wave

2.6. Unit of Analysis

angler day

2.7. Collection Mode

paper form; digital pen

3. Communications Plan

3.1. Internal

During project planning phase in 2011, conference calls with project team members will be more frequent than monthly. Once the project is designed and field work is underway, conference call frequency will drop to monthly unless there are emerging issues that require more frequent communication. Documents will be shared via email communication and the MRIP collaboration tool will be used when documents require multiple users to edit.

3.2. External

Monthly reports will be submitted as required by the Operations Team. Presentations will be given upon request. Design documentation, field data sheets, and other sampling materials will be shared as they become available.

4. Assumptions and Constraints

4.1. New Data

Yes

4.2. Track Costs

4.3. Funding Vehicle

4.4. Data Resources

For new Access Point Intercept Survey Methods to be incorporated into the 2012 implementation of this project, new methods from the 2010 MRIP pilot study in North Carolina must be reviewed and approved by the Operations Team for regional use.
New estimation methods currently being reviewed by the Operations Team should be able to produce effort estimates at smaller regional scales than what is currently produced for the state of Florida.
Additional questions may need to be added to MRIP's data collection methods for effort in Florida to partition trips in the Florida Keys between Atlantic and Gulf of Mexico, and to partition effort among smaller subregions.

4.5. Other Resources

This project requires MRIP Consultant Support for 2011 to work with the project team to define sample strata, determine necessary sample sizes, and develop methods for side-by-side comparison and analyis.
This project requests funds to purchase software and hardware to support electronic submission of field data from the state Agency conducting the field data collections to the Regional Commission for data review and certification. Electronic data submission will ensure timeliness of data collection and submission to NMFS.

4.6. Regulations

The success of this project is not contingent upon any state or federal regulations.

4.7. Other

This project will add two new data fields to the Access Point Intercept Survey: depth fished and grid area fished.

5. Risk

5.1. Project Risk

Table 1: Project Risk

Risk Description	Risk Impact	Risk Probability	Risk Mitigation Approach

6. Final Deliverables

6.1. Additional Reports

6.2. New Data Sets

Data to support catch estimates for new sub-region strata in FL

6.3. New Systems

Electronic field data collection and storage.

7. Project Leadership

7.1. Project Leader and Members

Table 2: Project Members

Project Role	Name	Organization	Title

8. Project Estimates

8.1. Project Schedule

Table 3: Project Schedule - Major Tasks and Milestones

#	Schedule Description	Planned Start	Planned Finish	Prerequisites	Milestones

8.2. Cost Estimates

Table 4: Cost Estimates

Project Need	Cost Description	Date Needed	Estimated Cost
TOTAL			$0.00